REMARKS

These comments are responsive to the non-final Office Action dated March 10, 2006. The Office Action objected to claim 5, rejected claims 8, 10, 17, and 27 under 35 U.S.C. § 112, second paragraph, as being anticipated by Fossum et al. (Pat. No. 5,841,126), rejected claims 1-4, 9, 10, 13-15, 27, and 28 under 35 U.S.C. § 102(b) as being anticipated by Miyauchi et al. (US Patent Publication No. 2002/0069314 A1), rejected claims 11 and 12 under 35 U.S.C. § 102(b) as being anticipated by Awada et al. (US Patent Publication No. 2002/0026566 A1), and rejected claims 29 under 35 U.S.C. § 103(a) based on Miyauchi in view of Awada. Each of these is discussed below under the corresponding heading.

Claim Objections and Rejections Under 35 U.S.C. §112

The Office Action objected to claim 5. The Examiner is thanked for noting the typographical error, which has been corrected.

The Office Action rejected claims 8 and 10 under 35 U.S.C. § 112, second paragraph, based on there being an insufficient antecedent basis for the limitations of "said first flags". It is respectfully submitted that there is sufficient basis for this limitation. Specifically, both of these claims depend on claim 1. Claim 1 recites "a plurality of data storage areas" and that "each of the data storage areas ... contains a first flag", hence there are a plurality of such first flags. Thus, there is sufficient antecedent basis for the limitations of "said first flags".

The Office Action rejected claims 17 and 27 under 35 U.S.C. § 112, second paragraph, as being indefinite. The Examiner is thanked for noting the informalities of these claims, which have been corrected.

Allowable Subject matter

The Office Action allowed claims 16, 18-26, and 30-32. The Office Action also indicated that if claims 5 and 8 were rewritten in independent form and the various objections and rejections under 35 U.S.C. § 112, second paragraph, were attended to, that claims 5-8 and 17 would also be allowable. Claims 5 and 8 are now rewritten in independent form and the various objections and rejections under 35 U.S.C. § 112, second paragraph, have been attended to as described in the preceding section. Consequently, claims 5-8, 16-26, and 30-32 are now all believed allowable.

VIA EFS
Attorney Docket No.: SNDK.345US0

Application No.: 10/751,096

Claim Rejections Under 35 U.S.C. §102 and §103

Claims 1-4, 9, and 10

Claims 1-4, 9, and 10 are rejected under 35 U.S.C. § 102(b) as being anticipated by Miyauchi et al. (US Patent Publication No. 2002/0069314 A1). It is respectfully submitted that these rejections are in error.

Claims 2-4, 9, and 10 are all dependent claims having claim 1 as their base claim. Claim 1 reads:

> 1. A non-volatile memory comprising a plurality of data storage areas, *each* of the data storage areas containing:
> a user data portion; and
> an overhead data portion, wherein the overhead data portion of *each* data storage area contains a first flag for *indicating that another one* of the data storage areas is correctly written.

The emphasis is added. It is believed that the aspects of the present invention presented in this claims are neither taught nor suggested by the Miyauchi reference, which uses quit a different structure.

Concerning "a plurality of data storage areas, each …containing: a user data portion; and an overhead data portion", the Office Action cites elements 23 and 21-22 of Miyauchi's Figure 2 as corresponding to the user data portion and overhead data portion, with the description of paragraphs 28-29 and 39-40. However, as described there, Miyauchi organizes the sectors of the data storage area 23 into groups of n sectors. Areas 21 and 22 respectively store management data for the block 20 as a whole and for groups of sectors in area 23. The cited "first flag[s]" in the Office Action, which refer to the status of the groups in "data storage area" 23, are all in the "Area for group management data" 22. Thus, Miyauchi presents a plurality of data storage areas (the "groups" of n sectors) in 23, but these store *only* data and do *not each* have flag indicating that another group is correctly written, and a *separate* overhead area 22 that *only* overhead information about the groups and *no* user data.

In contrast, claim 1 of the present application presents:

> a plurality of data storage areas, *each* … containing:
> a user data portion; and
> an overhead data portion, wherein the overhead data portion of *each* data storage area contains a first flag for *indicating that another one* of the data storage areas is correctly written. [emphasis added]

This structure is shown in Figures 6A and 6B of the present application: as shown there, **each** data storage area (a sector such as 631 or 633 in this embodiment) includes **both** of a user date area 611 and an overhead area 623, where **each** overhead area 623 includes a flag 617 to indication that another data storage area is correctly written.

Consequently, it is respectfully submitted that a rejection of claim 1, and its dependent claims 2-4, 9, and 10, is in error and should be withdrawn.

Many of dependent claims 2-4, 9, and 10 are believed further allowable for the further limitations they include.

With respect to claim 2, this includes the additional limitation of "wherein the overhead data portion of *each* of said data storage areas further contains a second flag for indicating that the data storage area *itself* is correctly written" where the emphasis is again added. The element cited by the Office Action as the second flag is again only in Miyauchi's "Area for group management data" and refers back to status in the data in the groups in "Data storage area 23", not element 22 itself.

With respect to claim 3, this includes the additional limitation of "wherein each of said data storage areas corresponds to a sector of data." The Office Action is correct that Miyauchi does describe sectors, but these are not what the Office Action is identifying as the "data storage areas"; rather, what the Office Action identifies as "data storage areas" are instead the "groups" of Miyauchi, which are multi-sector composites.

With respect to claim 4, this includes the additional limitation of:

> wherein the data storage areas are organized into a plurality of units of erase, and wherein the overhead data portion of a predetermined data storage unit in each of the units of erase further contains a third flag for indicating that the unit of erase to which the predetermined data storage unit belongs has had an erase operation completed.

The emphasis is again added. The element cited by the Office Action as the third flag is again only in Miyauchi's "Area for group management data" that contains no user data, which, according to the limitations of the claim, a data storage needs to include.

With respect to claim 10, the cited location refers to the content of the groups (where user data is being kept) having ECC; it does not state that what the Office Action cites as the "first flags", namely elements found in element 22, are ECC protected.

Claims 13-15 are also rejected under 35 U.S.C. § 102(b) as being anticipated by Miyauchi et al. (US Patent Publication No. 2002/0069314 A1). It is respectfully submitted that these rejections are in error.

As discussed above with respect to claim 1, Miyauchi uses a structure where a memory block 20 (Figure 1) has a plurality of data storage areas (the "groups" in the data storage area) and that has management data for the block (21) and the groups (22). The "groups" in element 23 store user data, while the "Area for group management data" 22 contain the flags (e.g., F3) that the Office Action identifies as indicating whether a given storage area is written, along with other status. Thus, according to the teachings of Miyauchi, as data is written into a series of data storage areas (identified as the "groups" in element 23), any status information of these is maintained in the separate element 22. As shown in Miyauchi's Figures 7A and 7B, these flags are updated as a separate write *after* the sectors are written, not as part of writing a "group".

In contrast, claim 13 contains the limitation of:

> wherein during a sequential write process of data into two or more of said data storage areas, for *each* data storage area subsequent to the first, an indication of the *write of the preceding data storage area is written into the current data storage area as part of its write process*. [emphasis added]

Thus, this describes writing data to one data storage and, along with the data for that storage area, writing in an indication that the preceding storage area is written; further, this is done as part of the same write process. This is something that is neither taught nor suggested by Miyauchi, where all of the write indications (as identified by the Office Action) are written into a distinct management area---and are done as part of a different write process.

Consequently, it is respectfully submitted that a rejection of claim 13, and its dependent claims 14 and 15, is in error and should be withdrawn.

Dependent claims 14 and 15 are believed further allowable for the further limitations they include. More specifically, claim 14 includes a limitation similar to that found in claim 2 and is believed further allowable for the reasons discussed above with respect to claim 2. Similarly, claim 15 includes the data portion, overhead portion limitation as discussed above with respect to claim 1 and is believed further allowable for the reasons discussed above with respect to claim 1.

Claims 27 and 28 are also rejected under 35 U.S.C. § 102(b) as being anticipated by Miyauchi et al. (US Patent Publication No. 2002/0069314 A1), with claim 29 rejected under 35 U.S.C. § 103(a) with Miyauchi as the primary reference. It is respectfully submitted that these rejections are in error.

Claims 28, and 29 are dependent claims having claim 27 as their base claim. Claim 27 contains the limitation of "a plurality of sectors each having an data portion and an overhead portion". This was limitation has been discussed with respect to claim 1, where the "data storage area" of claim 1 is the specific embodiment of a sector (as in claim 3). As discussed with respect to claim 1, this structure is absent in Miyauchi.

Additionally, the second step of claim 28 is "verifying that the block is successfully erased", for which the Office Action references Miyauchi's paragraph [0030] and its flag F1. However, the flag F1 is an "erase enable flag". Miyauchi neither teaches nor suggests that it is set in response to actually "*verifying* that the block is *successfully* erased", where the distinction highlighted by the added emphasis needs to be noted: an aspect of the present invention is to keep track not just that an erase process was *enabled*, but that verifying and recording that the erase was successfully performed and completed. As described in the present application (see, for example, paragraph [0011] or [0043]), this can be important in the case when an operation is aborted since, although the erase may have been enabled, it is important to know whether or not it actually happened. Further, in the teachings of Miyauchi, this "indication that the block is successfully erased" (which the Office Action identifies as Miyauchi's flag F1) is written into a special management data area (22), not into a sector that, as specified in the claim, has both "a data portion and an overhead portion".

Consequently, it is respectfully submitted that a rejection of claim 27, and its dependent claims 28 and 29, is in error and should be withdrawn.

The Office Action rejected claims 11 and 12 under 35 U.S.C. § 102(b) as being anticipated by Awada et al. (US Patent Publication No. 2002/0026566 A1). It is respectfully submitted that these rejections are in error. Also, claim 11 has been amended somewhat to rearrange it structure to make it easier to read.

Claim 11 (as amended) includes the structure of:

> a plurality of units of erase *each* having a ***plurality*** of data storage areas, ***each*** of the data storage areas containing:
>> a user data portion; and
>> an overhead data portion,

where the emphasis is added. This structure is again shown in Figures 6A and 6B of the present application in the embodiment where each unit of erase (a Block) is composed of *multiple* data storage areas (sectors, such as 631, 633), and *each* data storage area includes *both* of a user data portion (611) and an overhead portion (623). (The "flag" of the claim is EAF, 621.) This structure is not found in Awada.

As shown in Figure 6 of Awada and discussed at the locations cited in the Office Action, Awada also presents a memory divided into sectors; however, as shown in Awada's Figure 6 (and noted in the Office Action), these sectors are specifically segregated into sectors storing overhead data ("Control-Data Area", "Switch-Data-Storage Area", "Alarm-Data-Storage Area") and sectors storing user data. Consequently, Awada does not disclose "a ***plurality*** of data storage areas, ***each*** of the data storage areas containing: a user data portion; and an overhead data portion"; instead, Awada presents distinct sectors devoted to either user data or overhead data, but not both.

Further, it appears that in Awada, the unit of erase (or block) *is* a sector---see, for example, the cited reference of paragraph [0068]. Thus, Awada also does not present

> a plurality of units of erase *each* having a ***plurality*** of data storage areas, ***each*** of the data storage areas containing:
>> a user data portion; and
>> an overhead data portion,

where the emphasis is again added. Instead, in the arrange of Awada, the "flag for indicating that the unit of erase ... has had an erase operation completed" is not located in the unit of erase itself (as stated in the claim), but is instead located in another unit of erase, namely a sector dedicated to control data.

Consequently, it is respectfully submitted that a rejection of claim 11, and its dependent claim 12, is in error and should be withdrawn.

Conclusion

For the reasons above, it is believed that the various rejections of claims 1-4, 6, 8-15, 17, and 27-29 are not well founded and should be withdrawn. Reconsideration of claim 1-4, 6, 8-15, 17, and 27-29 and an early indication of their allowability and an early indication of their allowance are earnestly solicited.

Respectfully submitted,
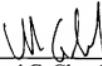
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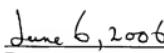
For Gerald P. Parsons
Reg. No. 24,486

PARSONS HSUE & DE RUNTZ LLP
595 Market Street, Suite 1900
San Francisco, CA 94105
(415) 318-1160 (main)
(415) 318-1163 (direct)
(415) 693-0194 (fax)